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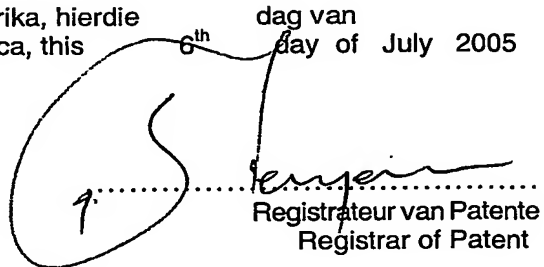
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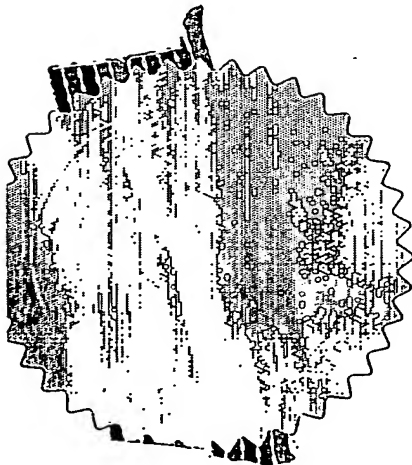
Application forms P.1, P.2 and provisional specification of South African Patent Application No. 2003/9884 as originally filed in the Republic of South Africa on 22 December 2003 in the name of GSBS DEVELOPMENT CORPORATION for an invention entitled: "ALARM DEVICE FOR USE WITH A FIRE DETECTION SYSTEM."

Geteken te
Signed at PRETORIA

in die Republiek van Suid-Afrika, hierdie
in the Republic of South Africa, this

6th dag van
day of July 2005


Registrateur van Patente
Registrar of Patent



REPUBLIC OF SOUTH AFRICA

PATENTS ACT, 1978

REGISTER OF PATENTS

OFFICIAL APPLICATION NO.		LODGING DATE: PROVISIONAL		ACCEPTANCE DATE	
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INTERNATIONAL CLASSIFICATION		LODGING DATE: COMPLETE		GRANT DATE	
51		23		47	
FULL NAME(S) OF APPLICANT(S) / PATENTEE(S)					
71	GSBS DEVELOPMENT CORPORATION				
APPLICANTS SUBSTITUTED				DATE REGISTERED	
71					
ASSIGNEE(S)				DATE REGISTERED	
71					
FULL NAME(S) OF INVENTOR(S)					
72	1) COLIN WILLIAM PETER ATTWELL 2) DUNSTAN WALTER RUNCIMAN				
PRIORITY CLAIMED		COUNTRY		NUMBER	
		33		31	
TITLE OF INVENTION					
54	ALARM DEVICE FOR USE WITH A FIRE DETECTION SYSTEM				
ADDRESS(ES) OF APPLICANT(S) / PATENTEE(S)					
13515 BALLANTYNE, CORPORATE PLACE, CHARLOTTE, NORTH CAROLINA 28277, UNITED STATES OF AMERICA					
ADDRESS FOR SERVICE		Brian Bacon & Associates 2 nd Floor Mariendahl House Norwich on Main Newlands 7700 Cape Town Western Cape			BB REF 10409
74					
PATENT OF ADDITION TO NO.			DATE OF ANY CHANGE		
61					
FRESH APPLICATION BASED ON			DATE OF ANY CHANGE		

REPUBLIC OF SOUTH AFRICA
PATENTS ACT, 1978
APPLICATION FOR A PATENT AND ACKNOWLEDGMENT OF RECEIPT
(Section 30(1) Regulation 22)

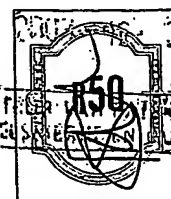
THE GRANT OF A PATENT IS HEREBY REQUESTED BY THE UNDERMENTIONED APPLICANT
ON THE BASIS OF THE PRESENT APPLICATION FILED IN DUPLICATE

21 01 OFFICIAL APPLICATION NO. 2003/9884

BB REF

REC-2009

HANDLING



71 FULL NAME(S) OF APPLICANT(S)

GSBS DEVELOPMENT CORPORATION

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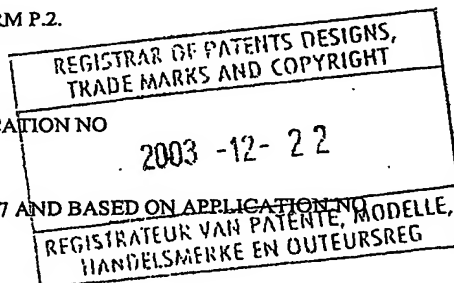
54 TITLE OF INVENTION

ALARM DEVICE FOR USE WITH A FIRE DETECTION SYSTEM

☐ THE APPLICANT CLAIMS PRIORITY AS SET OUT ON THE ACCOMPANYING FORM P.2.
(COUNTRY) (DATE) (NO.)

☐ 21 01 THE APPLICATION IS FOR A PATENT OF ADDITION TO PATENT APPLICATION NO

☐ 21 01 THIS APPLICATION IS A FRESH APPLICATION IN TERMS OF SECTION 37 AND BASED ON APPLICATION NO



THIS APPLICATION IS ACCOMPANIED BY:

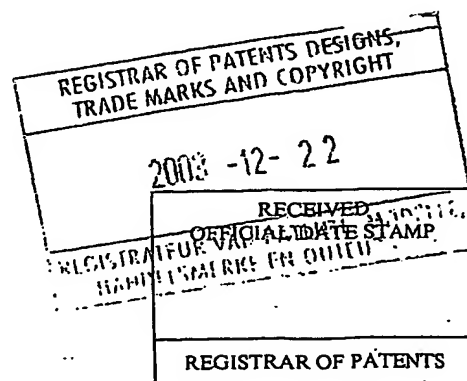
- ☒ 1. A single copy of a provisional or two copies of a complete specification of 8 pages
- ☐ 2. Drawings of sheets
- ☐ 3. Publication particulars and abstract (Form P.8 in duplicate).
- ☐ 4. A copy of Figure of the drawings (if any) for the abstract.
- ☐ 5. An assignment of invention
- ☐ 6. Certified priority document(s). (State number)
- ☐ 7. Translation of the priority document(s)
- ☐ 8. An assignment of priority rights
- ☐ 9. A copy of Form P.2 and the specification of RSA Patent Application No
- ☒ 10. Form P.2 in duplicate
- ☐ 11. A declaration and power of attorney on Form P.3
- ☐ 12. Request for ante-dating on Form P.4
- ☐ 13. Request for classification on Form P.9
- ☐ 14.

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DATED THIS 19th DAY OF December 2003

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APPLICANTS PATENT ATTORNEYS

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BRIAN BACON & ASSOCIATES
PATENT ATTORNEYS
CAPE TOWN

REPUBLIC OF SOUTH AFRICA
Patents Act, 1978

PROVISIONAL SPECIFICATION

(Section 30 (1) – Regulation 27)

21	01	OFFICIAL APPLICATION NO
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22	LODGING DATE
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2003 -12- 2 2

2003 / 9884

71	FULL NAME(S) OF APPLICANT(S)
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GSBS DEVELOPMENT CORPORATION

72	FULL NAME(S) OF INVENTOR(S)
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- 1) COLIN WILLIAM PETER ATTWELL
- 2) DUNSTAN WALTER RUNCIMAN

54	TITLE OF INVENTION
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ALARM DEVICE FOR USE WITH A FIRE DETECTION SYSTEM

FIELD OF THE INVENTION

THIS INVENTION relates to an alarm device.

BACKGROUND TO THE INVENTION

A variety of inexpensive stand alone fire detectors exist for domestic use. These are usually installed on ceilings, are battery powered, equipped with a light emitting diode (LED) indicator and have a limited audio output. The problems with these fire detectors are that they are not always loud enough to awaken sleeping children or guardians in rooms adjacent an emergency situation such as a fire, they are generally not able to awaken or alert hearing or sight impaired persons in emergency situations such as a fire and they do not provide any information to direct anyone to a safe exit in emergency situations such as a fire.

In a domestic fire emergency situation there is a need to awaken and alert sleeping occupants or to visually or aurally alert impaired occupants. In a domestic environment this is required to be accomplished at as low a cost as possible and with a means which is simple and easy to install. Applicant believes that the invention meets this need by, for example, adding low cost components to an existing fire detection system and at the same time adding the capability of directing the occupants towards a safe exit.

BRIEF DESCRIPTION OF THE INVENTION

According to one aspect of the present invention there is provided an alarm device for use with a fire detector or fire detection system which emits an audible or visual alarm signal on detecting a fire condition, the device including discriminating means for recognising the pattern of the alarm signal and for activating a sound bomb upon recognition of an alarm signal.

The device can include means which enable it to learn the pattern of the signal which it must recognise.

Further according to the invention the alarm device may include a light emitting means such as, for example, a strobe light.

The alarm device may further include a recording and playback means on which a message may be recorded and played back after the sound bomb has been activated.

According to a further aspect of the present invention there is provided a fire alarm installation which comprises a fire detector having means for emitting an audible or visible signal having a signal pattern upon a fire situation being detected, and an alarm device including discriminating means for recognising said pattern, a sound bomb, and means for activating the sound bomb upon said discriminating

means detecting said signal pattern.

DETAILED DESCRIPTION OF THE INVENTION

An alarm device according to the invention will now be described in detail. The alarm device is provided for use with an existing domestic fire detector or detection system located in, for example, a house, a building housing people or a set of buildings housing people. The alarm device includes a housing which is located remote from and not linked to the fire detector or detection system. The alarm device is installed and operates independently of the existing fire detection system and there is no wiring between them. A sounder in the form of a "sound bomb" is located in the housing of the device. In one embodiment of the invention the sound bomb comprises one or more piezo-electric diaphragms mounted in a Helmholtz resonator chamber with a high volume output. The sound level is high, being at or near the threshold of pain, so as to ensure that the occupants are awakened by the alarm device.

The alarm device includes a microphone and discriminator circuitry so that the sounder is activated by a pre-learned sound pattern which emanates from the existing fire detector or detection system. The alarm device is taught to recognise its associated fire detector's sound signature upon its installation. The device is set to "learn" mode and then the existing fire detector to which the alarm device is to be responsive is activated using its test mode. The detector is allowed to sound for a period of time sufficient for the alarm device to register that it has "learnt" the sound signature. The alarm device is then switched to normal mode and

the alarm device may then be tested for correct operation by again triggering the existing fire detector using its test mode. The alarm device, if the learning has been successful, will then operate. A small reset switch or link on the alarm device silences it and then returns it to the armed state. The alarm device may be tested periodically by testing the existing fire detector to which it is responsive.

The discriminator circuitry may function by using pattern recognition techniques or it may make sample comparisons to stored sound signatures so as to reduce the likelihood of false activations arising from ambient noise conditions such as, for example, television, radio or vehicle noises. The mode of operation of the discriminatory function of the alarm device can be based on detection of sound fundamentals and harmonics, resonances and mark-space timing.

Other activating methods which may be used by the alarm device include, for example, optical methods which make use of the strobe output of a existing fire detector system in the house combined with a fast-rise time edge detector to eliminate any false readings from other light sources and the use of dual tone multi-frequency (DTMF) signalling from the sender unit of the existing fire detector system.

The alarm device is preferably installed in close proximity to the sleeping location of an occupant of the house such as, for example, at the head of a bed, on a wall in a bedroom or on a bedside table.

The alarm device may further include a recording and playback means on which a message is recorded and played back after the sounder has been activated. The message can be a low volume voice message by someone such as, for example, the mother of a child if the alarm device is installed in the room of the child. The message is activated after the sounder has been activated so as to sooth the child and the message may also include the mother's voice giving instructions to the child on what to do and how to exit the house in the case of an emergency.

The alarm device may further include a light emitting means such as, for example, a high intensity Xenon strobe light or a high intensity light emitting diode (LED). The strobe light or LED indicates the proximity of an escape route or exit away from the fire. There may be more than one strobe light or LED included in the alarm device, with the position on the device or colour of the specifically activated strobe light or LED indicating the direction away from the fire and therefore the best direction to use for an escape route or exit.

The duration of activation of the sound and light functions of the alarm device is limited to a short time such as, for example, fifteen minutes.

The alarm device further includes a battery which is replaceable and a battery power monitor circuit which alerts the occupants of the house via an LED when the battery power is low and needs to be re-charged or replaced.

A series of alarm devices may be provided. All the alarm devices

include a sounder and each alarm device "learns" the sound pattern of another device. All the alarm devices include a light emitting means such as, for example, a high intensity Xenon strobe light or a high intensity LED, and also indicate the proximity of an escape route away from the fire detected by the existing fire detection system.

An alarm device which monitors an exit may include a heat detector which prevents activation of the device by the learned sound of another alarm device if dangerous heat levels are detected. The dangerous situation may be indicated by activating a red coloured LED or strobe as opposed to activating a green coloured LED when there is no dangerous situation.

A fire detected by the fire detector or fire detection system causes a specific sound pattern to be emitted, that sound pattern activates a first alarm device, the sound emitted by the first alarm device activates a second alarm device and so on. This thus causes a sound cascading effect in which multiple alarm devices located at various positions throughout the house are triggered to activate from a single source of fire detected by the existing fire detector or detection system. This provides a means to evacuate all the occupants in the house to safety timeously and via the safest escape routes or exits. These safe escape routes or exits may be indicated to be to one side of the house, away from the side of the house in which a fire has been detected or the safe escape routes or exits may be

indicated radially away from a central point in the house if the fire has been detected at a central point in the house.

Dated this 19th day of December 2003



Brian Bacon & Associates
Applicant's Patent Attorney

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